CLAIMS:

1.   A method of segment-based motion estimation to determine motion vectors for respective segments (S11-S14) of a segmented image (100), the method comprising:
          - creating sets of candidate motion vectors for the respective segments (S11-S14);
5   - dividing the segmented image (100) into a grid of blocks (b11-b88) of pixels;
          - determining for the blocks (b11-b88) of pixels which of the candidate motion vectors belong to the blocks (b11-b88), on basis of the segments (S11-S14) and the locations of the blocks (b11-b88) within the segmented image (100);
          - computing partial match errors for the blocks (b11-b88) on basis of the
10   determined candidate motion vectors and on basis of pixel values of a further image (102);
          - combining the partial match errors into a number of match errors per segment;
          - selecting for each of the sets of candidate motion vectors respective candidate motion vectors on basis of the match errors; and
15   - assigning the selected candidate motion vectors as the motion vectors for the respective segments (S11-S14).

2.   A method of segment-based motion estimation as claimed in claim 1, further comprising:
20   - splitting each block of a portion of the blocks (b11-b88) into respective groups of pixels on basis of the segments (S11-S14) and the locations of the blocks (b11-b88) within the segmented image (100), each block of the portion of the blocks (b11-b88) overlapping with multiple segments (S11-S14);
          - determining for the groups of pixels which of the candidate motion vectors
25   belong to the groups of pixels, on basis of the segments (S11-S14) and the locations of the groups of pixels within the segmented image (100);
          - computing further partial match errors for the groups of pixels on basis of the determined candidate motion vectors and on basis of the pixel values of the further image (102); and

- combining the partial match errors and the further partial match errors into a
number of match errors per segment.

3.   A method of segment-based motion estimation as claimed in claim 1, whereby
determining for the blocks (b11-b88) of pixels which of the candidate motion vectors belong
to the blocks (b11-b88), is based on the amount of overlap between segments (S11-S14) and
the blocks (b11-b88) within the segmented image (100).

4.   A method of segment-based motion estimation as claimed in claim 1, whereby
a first one of the partial match errors corresponds with the sum of differences between pixel
values of the segmented image (100) and further pixel values of the further image (102).

5.   A method of segment-based motion estimation as claimed in claim 1, whereby
a first one of the blocks (b11-b88) of pixels comprises 8*8 or 16*16 pixels.

6.   A method of segment-based motion estimation as claimed in claim 1, further
comprising:
          - determining a final motion vector on basis of a first one of the motion
vectors, being assigned to a first one of the segments, and on basis of a particular motion
vector, being assigned to a further segment of a further segmented image, the segmented
image and the further segmented image being both part of a single extended image, the first
one of the segments and the further segment being both part of a single segment which
extends over the segmented image and the further segmented image; and
          - assigning the final motion vector to the first one of the segments.

7.   A method of segment-based motion estimation as claimed in claim 6, whereby
the first one of the motion vectors is assigned as the final motion vector if a first size of the
first one of the segments is larger than a second size of the further segment and, whereby the
particular motion vector is assigned as the final motion vector if the second size is larger than
the first size.

8.   A motion estimation unit (300) for estimating motion vectors for respective
segments (S11-S14) of a segmented image (100), the motion estimation unit comprising:

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        - creating means (314) for creating sets of candidate motion vectors for the respective segments (S11-S14);

        - dividing means (304) for dividing the segmented image (100) into a grid of blocks (b11-b88) of pixels;

5   - determining means (306) for determining for the blocks (b11-b88) of pixels which of the candidate motion vectors belong to the blocks (b11-b88), on basis of the segments (S11-S14) and the locations of the blocks (b11-b88) within the segmented image (100);

        - computing means (308) for computing partial match errors for the blocks

10 (b11-b88) on basis of the determined candidate motion vectors and on basis of pixel values of a further image (102);

        - combining means (310) for combining the partial match errors into a number of match errors per segment;

        - selecting means (312) for selecting for each of the sets of candidate motion

15 vectors respective candidate motion vectors on basis of the match errors; and

        - assigning means for assigning the selected candidate motion vectors as the motion vectors for the respective segments (S11-S14).

9.   An image processing apparatus (500) comprising:

20   - a segmentation unit (502) for segmenting an input image into a segmented image (100); and

        - a motion estimation unit (508) for estimating motion vectors for respective segments (S11-S14) of the segmented image (100), as claimed in claim 6.

25 10.   An image processing apparatus (500) as claimed in claim 9, characterized in further comprising processing means being controlled (504) on basis of the motion vectors.

11.   An image processing apparatus (500) as claimed in claim 10, characterized in that the processing means (504) are arranged to perform video compression.

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12.   An image processing apparatus (500) as claimed in claim 10, characterized in that the processing means (504) are arranged to perform de-interlacing.

13.   An image processing apparatus (500) as claimed in claim 10, characterized in that the processing means (504) are arranged to perform image rate conversion.

14.   An image processing apparatus (500) as claimed in claim 9, characterized in that it is a TV.